



C/3-29 FA, Leroy Scott, Mountaineer

Proactive Fires: Leveraging Technology to Defeat Artillery High-Payoff Targets

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The azimuth of "Field Artillery Vision 2020" by Brigadier General Leo J. Baxter (December 1994) is clear—leverage technology to achieve overwhelming Force XXI combat power on future battlefields. The Field Artillery already leads the way in developing joint doctrine; codifying information age warfare tactics, techniques and procedures (TTP); and projecting technology into unified combat operations. Daily, technologies change the way we approach warfighting as operations across the continuum become seamless.

Today, automation allows commanders to share a common view of the battlefield and employ increasingly lethal fires throughout their battlespace. As technology pushes the fire support "envelope," our doctrine struggles to keep up. The challenge for Redlegs is to be creative and integrate technologies and warfighting TTP.

The Battle Command Training Program (BCTP) provides an excellent opportunity to do both. Ideas can be tested against a robust World Class Opposing Force (OPFOR) capable of outranging friendly

systems. A prime example is the North Korean Peoples Army (NKPA), an artillery army whose 240-mm multiple-launch rockets (MRL) and 170-mm (Koksan) self-propelled guns are particularly lethal. Traditional counterfires are effective, but they are reactive by definition. The conundrum is how to defeat these artillery high-payoff targets (HPT) before they inflict devastating losses on friendly units.

The 4th Infantry Division (Mechanized) Artillery's Irongunners from Fort Carson,

Colorado, generated proactive fires TTP to solve this puzzle. This article focuses on how the Irongunners employed technology and proactive fires TTP to defeat the OPFOR during three Korean BCTP exercises. It should be noted that proactive fires are neither BCTP gamesmanship nor a panacea for success only in Korea. As we move out of the simulation center and into the real world, these TTP will evolve against other threats in other geographical areas of responsibility.

Proactive Fires Primer

Proactive fires de-synchronize enemy phases of fires by defeating artillery HPTs before they can be massed. Regardless of the mission, the 4th Infantry Division conducts high-tempo, offensive mindset operations that synchronize air interdiction (AI) and close air support (CAS) sorties; attack helicopter deep operations; intelligence and electronic warfare (IEW) systems; long-range surveillance detachments (LRSDs); joint suppression of enemy air defense (JSEAD) packages; psychological operations (PSYOP); deception; and multiple-launch rocket system (MLRS) fires, to include SEAD and Army tactical missile systems (ATACMS). The automation centerpiece of proactive fires is Warrior.

Warrior is an interim automation tool, analogous to the initial fire support automation system (IFSAS) that will be replaced by the advanced Field Artillery tactical data system (AFATDS). Warrior isn't a new system, having been in existence since the late 1980s. However, it isn't widely understood or used outside the military intelligence community.

Warrior is actually computer software, a subset of the all-source analysis system (ASAS) software for stand-alone computer systems and local area networks. It allows units not equipped with ASAS hardware and software to "get on line."



The 4th Division conducts high-tempo, offensive mindset operations that synchronize AI, CAS and attack helicopter deep operations—among other operations.



Sergeant James Yahraes, C/10 FA, crew chief and Audie Murphy Club member, watches MLRS loading. C/10 FA is the "designated shooter" to fire reactive SEAD on targets that appear after the SEAD plan is formulated.

Warrior allows automated reception and plotting of intelligence information and facilitates rapid analysis and synthesis into intelligence and targeting products. This dramatically shortens sensor-to-shooter times.

Warrior hardware consists of Sunsparc computer terminals, which we put in the division main (DMAIN), division tactical (DTAC), division artillery (Div Arty) and brigade command posts. The divisional signal battalion establishes the local area networks using mobile subscriber equipment (MSE) to connect the Warrior terminals.

Warrior software is a criterion-based structured query language. Operators enter the commander's protocol into Warrior to execute automatic target analysis, trigger event alarms and determine output and reports. The key to success with Warrior is collocation of the intelligence and fire support analysis functions.

Evolution of Proactive Fires

In the Fall of 1993, the division G2 borrowed two Warriors from the 2d Armored Division at Fort Hood, Texas, to prepare for an April 94 BCTP. Our training objectives were to focus the collection plan on and provide automation support for the targeting process.

The G2 initially placed the Warriors in the DMAIN collection, management and

dissemination (CM&D) section and the all-source production section (ASPS). The CM&D terminal functioned as the file server and host for intelligence feeds. The ASPS terminal facilitated the G2's targeting effort. ASPS personnel passed printouts listing artillery and air defense acquisitions to the DMAIN fire support element (FSE) every 30 to 45 minutes or on-order.

The FSE used this printout to plot artillery and air defense systems on a target overlay.

The Div Arty commander placed an FA intelligence officer (FAIO) in the ASPS to speed this process. The FAIO used a radio headset to pass time-sensitive HPT intelligence to the variable-format message entry device (VFMED) operator in the FSE, thereby facilitating the timely engagement of these targets.

To assist the FSE, the G2 placed three soldiers per shift from the ASPS in the FSE to form an intelligence/fire support analysis team. The team was led by a captain and augmented by two personnel from the military intelligence battalion's tactical collection and analysis element (TCAE). The assistant fire support coordinator (AFSCoord) supervised this team and the FSE's current operations element. The G2 Warriors also provided critical intelligence to the deputy FSCoord supervising the division deep operations cell (DDOC), especially with regard to SEAD plans.

These procedures facilitated our training objectives and enabled us to do well

during the BCTP. However, experience showed that while the analysis team concept worked, the FAIO need full-time access to the Warrior located in the ASPS. This was a critical shortcoming that degraded our ability to rapidly engage artillery HPTs.

The G2 borrowed additional Warriors to prepare for the I Corps BCTP in October 1994. Our solution was to move a dedicated Warrior and the FAIO into the FSE. This allowed the FSE to focus on artillery and air defense systems. The FAIO generated Warrior search criteria based on the commander's protocol, gleaned targets from the targeting map and Warrior screen and then passed fire missions to the VFMED or lightweight computer unit (LCU) operator. These procedures improved our performance during the I Corps BCTP, but they still didn't facilitate the dissemination of real-world classified intelligence to the units that needed it.

The 4th Infantry Division staff changed how battlefield operating systems are synchronized during tactical operations after using Warrior and proactive fires TTP. The staff subsequently revised the division's tactical standing operating procedures (TACSOP) to include a decide-detect/track-deliver-assess targeting methodology that results in the production and attack of a refined, all-source enemy target *before* it fires.

Decide Phase. Priority intelligence requirements (PIR) drive the collection plan. The G2 focuses collection assets and analysis on artillery HPTs, updating them after each targeting meeting. The G2 also submits information requests to corps, focuses divisional and echelon-above-division sensors to execute the collection plan and submits unmanned aerial vehicle (UAV) requests to corps for imagery intelligence 48 to 72 hours before the divisional attack helicopter deep operations. The G2 also uses a UAV remote video terminal to provide real-time imagery intelligence.

The military intelligence battalion coordinates LRSD isolation, target folder preparation and insertion schedules with the G2 and aviation brigade to provide human intelligence on HPTs, named areas of interest (NAIs) and deep operations engagement areas. The military intelligence battalion also focuses EW assets (Trail Blazer and Quickfix) to collect and (or) jam artillery HPTs. The battalion commander coordinates Quickfix restricted operating zones to support deep operations, the scheme of maneuver and the collection plan.

The DMAIN FSE still generates the high-payoff target list (HPTL), attack guidance matrix (AGM) and target selection standards (TSS), but the format of the TSS is changed. The commander's protocol in Warrior now includes this information.

The division and Div Arty commanders deliberately relax the TSS so the intelligence/fire support analysis team can use Warrior to rapidly generate targets based on normally "soft" information, such as signals intelligence and raw imagery intelligence. The division commander is aware of the risk, especially with regard to ammunition expenditures, but we have proved to him time and again that the risk is worth it.

The DMAIN FSE coordinates deception, PSYOP, AI and CAS support for proactive fires. The battlefield deception element facilitates deception story execution, including artillery fires, unit move-

ments and positioning. The PSYOP support element coordinates leaflet drops, artillery leaflet fires and airborne radio broadcasts for the FSE. Divisional AI sortie nominations are massed against second-echelon maneuver and artillery HPTs and submitted to corps for inclusion in the integrated tasking order. The FSE tracks AI and CAS sorties by the integrated tasking order and updates target grids every two hours in coordination with the G3 operations officer, air liaison officer (ALO) and G3 air officer.

Detect/Track Phase. During BCTP exercises using the corps battle simulation (CBS), the CM&D intelligence file server receives battlefield intelligence collection module reports from the simulation center. The divisional signal battalion links the DMAIN Warriors to the corps' wide area network, using the MSE's packet switch capability. This capability enables the division to access corps computer files for reports and data.

During the I Corps BCTP, the G2 copied several UAV imagery intelligence and satellite imagery files simulating national imagery feeds into the analysis and collection element's (ACE's) forward area support terminal. This intelligence facilitated successful attack helicopter deep operations and proactive MLRS fires.

Warrior graphically portrays a myriad of intelligence data. In fact, Warrior eliminates the need for a targeting map because real-time information is displayed on the screen. During BCTP, signals intelligence consists primarily of communications intelligence (e.g., radio intercept) and electronics intelligence (e.g., air defense radars). Additionally, UAV, LRSD and moving-target indicator reports for selected areas are also displayed.

Intelligence produced by Warrior, coupled with the Q-37 Firefinder radar detections, enables the intelligence/fire support analysis team to quickly detect and track corps reactive artillery groups (CRAG), corps artillery

groups (CAG) and division artillery groups (DAG). Warrior can be programmed to produce printed reports listing the unit, location, and date and time of activity.

Warrior also facilitates the production of overlays depicting the time-phased movement of air defense radars. For example, radars located from 0800 to 1000 hours can be depicted in green, those located from 1001 to 1200 hours in red, etc. This allows the intelligence/fire support analysis team to track air defense radars and predict movement plans. This procedure identifies air defense belts and validates SEAD plans, which in turn facilitates attack helicopter survivability during deep operations.

Deliver Phase. The collection plan results in a view of the battlefield that's a snapshot in time and space of a thinking, mobile enemy. The goal of the intelligence/fire support analysis team is to synthesize the plethora of incoming data into a coherent *prediction* of enemy dispositions in order to attack HPT's with the entire suite of proactive fires systems, thus de-synchronizing his plans.

Warrior event alarms facilitate the engagement of targets by CAS and (or) MLRS within six to 10 minutes of detection. The AFSCOORD and FAIO designate an alert box in Warrior to notify the intelligence/fire support analysis team when a report matches preset criteria (e.g., a unit or equipment type located within the designated area). The G2 coordinates imagery intelligence and (or) LRSD coverage of the alert box. The FSE coordinates CAS with the DTAC FSE and at-my-command missions with Div Arty.

Once an event alarm is triggered, the DMAIN FSE executes the fire missions via a quick-fire channel to the firing units, and the DTAC FSE commits available CAS in coordination with the ALO. The division also uses this technique to locate KS-19 air defense batteries and 240-mm MRLs before attack helicopter deep operations.

Our division deep operations normally consist of AI and attack helicopter deep operations. Massed AI are very effective when planned and executed correctly, even during BCTP. We also mass all available attack helicopter battalions at night against one HPT at a time, the norm being two to three turns per night.

The DDOC coordinates deep operations using an MSE hot-loop connecting the DMAIN, aviation brigade, reinforce-



The division commander is aware of the risks involved in relaxing TSS, especially in terms of ammunition expenditures, but the payoff is worth the risks.



4th Infantry Division deep operations normally consist of AI and attack helicopter deep operations. The division masses all available attack helicopter battalions at night against one HPT for two to three turns per night.

ing FA brigade, Div Arty and divisional military intelligence and air defense battalions. The DMAIN FSE generates the SEAD plan and coordinates execution with the aviation brigade, Div Arty and the reinforcing FA brigade.

JSEAD windows are critical because

attack helicopter deep operations are conducted under this "umbrella." Two MLRS rockets are fired per ingress and egress SEAD target, per turn. The divisional MLRS battery—in this case C Battery, 10th FA—is the "designated shooter," firing reactive SEAD on targets that ap-

pear after the SEAD plan is formulated.

During the offense, the Div Arty echelons MLRS units forward, normally within three to five kilometers of the forward line of own troops (FLOT), to maintain the tempo of the attack and to deliver proactive fires. Maneuver brigades integrate an MLRS battery into each lead battalion task force, causing force protection to assume greater urgency as we "maneuver fires before we maneuver maneuver."

During the defense, the Div Arty also positions MLRS well forward. Whether executing proactive or counterbattery fires, the Div Arty expends 72 MLRS rockets per target. Some consider this excessive; however, these quantities are required to achieve joint munitions effectiveness manual (JMEM) effects in CBS.

Assess Phase. The 4th Infantry Division developed an automated battlefield damage assessment (BDA) algorithm to determine the effectiveness of proactive fires. Most proactive fires are unobserved, and with the exception of LRSD, UAV and pilot reports, target effects are determined by the number of rounds fired and target location error. The latter is minimal because Warrior generates targets to a 10-digit grid precision. The DMAIN FSE then consolidates mission-fired reports and passes them to the G2.

The BDA algorithm is a proven solution—plus or minus five percent—and is



Intelligence produced by Warrior, coupled with Q-37 radar detections, enables the intelligence/fire support analysis team to quickly detect and track high-payoff artillery targets.

used to refine the HPTL, collection plan, AI nominations and future attack helicopter deep operations and to generate MLRS and Q37 movement plans before the next targeting meeting. For details about the BDA algorithm, see "BDA Analysis: Using Automation to Speed the Process" by Captain John P. Hightower and Staff Sergeant John J. McClain of the 4th Infantry Division in the July-September 1994 issue of *Military Intelligence*.

The Next Level

The 4th Infantry Division BCTP exercises provided a wealth of observations. Insights were captured in an after-action report and forwarded to the Field Artillery School and III Corps Artillery at Fort Sill, Oklahoma, and to I Corps Artillery at Salt Lake City, Utah. Here are some key observations from that report.

- *The organization of the DMAIN will evolve as automation systems are increasingly integrated into its operations.* Instead of separate vans, the DMAIN will consist of functional nodes with battlefield operating system representatives in each node. The advantages of collocating these nodes could be debated, but personnel may not be able to "reach out and touch each other" except over the ethernet.

Regardless, personnel in these nodes will use automation tools to coordinate targeting, future operations, logistics and current battle operations with adjacent, supporting and supported headquarters. Of note, ACE personnel will use the ASPS's Warrior as the file server and host to synchronize targeting operations because dissemination requirements differ for collateral and special compartmented intelligence. Collocating targeting functions in the ACE also facilitates dissemination of order of battle data to the G2's DMAIN collateral enclave and then to Warriors in subordinate units.

- *Divisions require dedicated UAV support.* Our FAIO logs show UAV imagery intelligence to be the most timely, useful intelligence for proactive fires. The G2 must be able to execute the division's collection plan without depending on corps UAV support.

- *Software to link IFSAS/AFATDS and Warrior/ASAS is required.* This software would allow the automatic transmission of fire missions and target lists that meet preset criteria. Currently, we manually enter targets into the LCU. Automating

this process reduces the chance for human error and speeds engagement times.

- *CBS revisions need to reinforce the value of attacking "soft" HPTs.* Command, control, communications, computers and intelligence (C4I) and logistics facilities are HPTs. Unfortunately, like the Vietnam "body count," CBS limitations cause units to focus mostly on a "tube count." C4I and logistics facilities are HPTs worthy of proactive fires, especially those associated with fire support, because defeating them effectively desynchronizes enemy maneuver and fire support plans.

- *Units need to train soldiers to operate automation systems.* Information age warfare requires that our soldiers operate a myriad of automation tools, often without formal training.

The 4th Division identified a handful of bright young officers and enlisted soldiers and conducted our own IFSAS and Warrior training. These operators developed the Warrior search criteria and wrote the commanders protocol that proved successful during our division BCTPs. These criteria were validated and refined during subsequent exercises by other operators.

- *Warrior needs the means to plot Q-37 acquisitions electronically.* Detection reports in Warrior lack the required field identifiers to automatically parse or graphically portray the detections. The G2 and FSE solved this problem by manually modifying Q-37 reports and by writing a Warrior program to plot these radar acquisitions.

- *Rule Number One must be: when the intelligence/fire support analysis team produces a Warrior HPT, it's engaged.* Experience shows that following that rule, greater than 75 percent of the time we defeated the target; the rest of the time we "pounded dirt." This may seem like a waste of ammunition, but the payoff is worth it; in CBS, an artificially high number of MLRS rockets must be expended to achieve JMEM effects.

Our historical BCTP required supply rate is 26 launch/pod containers (LP/C) per day. In reality, the number of LP/Cs would probably be lower. In BCTP, the key is to have a detailed resupply plan for moving the LP/Cs that are more than what a unit can carry. Experience shows that once the plan is approved by the observer/controllers, MLRS ammunition flows in accordance with the plan to forward ammunition supply points.

Summary

The Irongunners moved "out of the box" to take advantage of Warrior capabilities and create proactive fires TTP. The keys were a focused, synchronized collection plan; integrated intelligence/fire support analysis team operations using Warrior and massed, proactive fires by the entire suite of fire support platforms.

We assumed risk to achieve overwhelming battlefield lethality and glean exciting insights on integrating technology and war-fighting TTP. In the end, the risk was worth it. The World Class OPFOR never knew what hit it.

We don't have all the answers, but proactive fires work. The Irongunners have only scratched the surface with respect to Warrior's potential as a Force XXI combat multiplier. As the 4th Infantry Division's moves its flag to the 2d Armored Division at Fort Hood, Texas, we challenge Redlegs to experiment with proactive fires and share insights with other Field Artillerymen and combined arms commanders. Meet you on the high ground!



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